California GARDEN

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A Prize Winning Rose

MAY 1938

CALIFORNIA GARDEN

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How to Plant a Tree . . . .

By H. A. GREENE

Published by Monterey Tree-Growing Club, Monterey, Calif.

Since the root tips or last year's growth are the only feeders for a tree, the hole for the reception of one to be transplanted should be double in dimensions, at least, to the outside measurement of the remaining root system. When new roots are sent forth, mellow, fertile soil should be there to receive them. If not convenient to provide special soil use the surface dirt at hand, since it contains more plant food, and pack the same about the roots, leaving no air spaces. The dirt immediately around the roots must be freed from rubbish.

The smaller the ball of earth retained about the roots of the tree to be transplanted or the fewer roots saved, the greater the danger of its starvation.

When the root hairs once shrivel they never revive; so prevent their exposure to sun or wind; best keep them covered and with something damp.

If any of the roots of the plants are found to be bruised or broken, cut them off slanting, with a sharp knife.

A root system requires a degree of air so do not bury the tree any deeper than it stood before. Have its upper roots comfortably covered. In planting, hold the tree firmly, about where it is to stand and sift cleaned soil, free from clods and manure, about the roots. Pack carefully but firmly. Should you be planting in the growing season pour water freely into the hole to more firmly pack the soil, but if the plant is dormant and the soil wet, do not use water.

Prune the top of the tree to a few main branches directly above the buds or even with stem only, in order not to tax the roots, for otherwise the transpiration of water from the foliage may be too great a draft for the remaining root feeders. For older trees, being transplanted, their tops must be balanced, with the root measure favoring the latter.

Many trees die because persons dislike to destroy the beauty or form of a tree by pruning severely, though a handsomer tree is sooner supplied by adequately cutting away or shortening the branches.

When a transplanted tree starts to grow, water frequently for a time, at least, but be sure that the soil at the roots is kept continuously damp.

For a tree to grow vigorously it must be supplied with drainage below. Shallow soil, particularly when clayey earth lies beneath, is unfavorable for tree planting. In many places it is necessary to blast out the bottom of a hole, in rock or hardpan to get a tree to thrive. With sticky sub-soil drainage must be supplied in one way or another. If the ground is sloping, a system of ditches, not less than three feet deep, connecting with each tree hole should be dug. Broken rock to the depth of about three inches should be placed on the bottom and covered with gravel or sand.

Keep the soil around the tree loosened up, don't allow it to cake or crack, also pull out weeds. This will prevent excessive evaporation; it will help matters to use a mulch.

To plant trees on swampy land spread out the roots on the surface of the ground and turn the soil over them, forming a conical mound. This mound should then be covered by moss or inverted sod. Trees with tap roots are not desirable for this kind of planting.

In taking seedlings from the wild only take those growing in the open, unshaded, and better select the smaller ones, about a year old.

Unless a ball of earth is maintained about the roots one should, immediately upon taking the seedling from the ground, dip its roots into a vessel containing mud, thus coating them for protection, then keep covered without excluding air.

Trees having an abundance of fibrous roots are most likely to succeed. "What is worth doing is worth doing well!" This particularly applies to tree planting.

(This paper won first prize)

In the November, 1937 issue of California Garden, Miss Sessions, who sent the above, wrote us an article on what trees to plant. Look it up before you decide where you are going to plant that specimen tree.

Our Summer Cloudiness . . .

By Dean Blake, Weather Bureau

The most dominant characteristic of the summer climate of San Diego is the night and morning "high fog," which persists from May to October with remarkable regularity. This cloud stratum, however, extends inland only as far as the mountains, and the weather in our back country during the summer months is clearer, drier and warmer than in the coastal area. It is largely because of this protecting veil that the littoral strip of southern California has the most equable climate in the United States.

For many years its cause was unknown. Many theories were advanced, but it was not until recently that one has been proposed which meets all requirements.

In the early days of aviation, pilots reported two distinct layers of air on the southern coast of California; one about 1500 feet deep over the surface; the other extending a considerable distance above. That nearest the ground was cool and moist; the one above warm and dry. At times temperatures were found to be 25 or 30 degrees higher at several thousand feet than near the surface. As temperature normally decreases with elevation, any rise is termed a "temperature inversion," and the warm dry air became known as the inversion layer.

Daily observations by airplane soon demonstrated that the inversion layer was always found when low clouds were present, and they occurred almost every day, but it was several years before the relation between the two was established.

It is now generally agreed that the cool moist surface layer comes from over the ocean, borne in by the winds which prevail from that direction. That is why both night and day are cooler near the coast than in the valleys and mountains of the interior. It also explains why blankets are necessary at night practically all summer near the ocean.

The warmer drier air above descends from great heights from over the interior of our continent; perhaps from Mexico and/or from our great Southwest. Its origin is proved by the direction of the air streams aloft, which are prevailingly from the east and southeast during the summer. Occasionally, however, its origin is over the Gulf of Mexico or the south Atlantic ocean, when, instead of being dry, it is laden with moisture, and thunderstorms result over our mountains.

Because of the fundamental difference in the two air strata, they act like a layer of oil on water—they will not mix. The base of the warm layer rests on the top of the cold air, and it is here, due to the greater absorption and radiation of the moist layer, that the clouds form at night and dissipate during the day. The clouds form at the place where the cold moist air ends and the warm dry air begins, and build downward during the night, and dissipate upward under the action of the sun during the day.

Ed. note: This completes Dean Blake's interesting series on problems affecting his office. Let us know how you liked them. Also, you might make suggestions on topics you would like discussed in a possible future series.

VISUAL INSTRUCTION ON "HOW TO PLANT YOUR HOME"

Alfred Hottes, associate editor of BETTER HOMES & GARDENS sends me their latest publication, "SEE HOW TO PLANT YOUR HOME." This is a new kind of landscape book in which the "reader" can get facts mainly from pictures rather than from a theoretical discussion of how to plant the home grounds.

This is a decided improvement on old style booklets, for each photograph and sketch tells a great deal more than any amount of printed matter could. The price, 25c. Better Homes & Gardens, Des-Moines, Iowa.

NEW FUNGICIDE NOT ONLY CONTROLS "BROWN PATCH" BUT COLORS GRASS GREEN

Scientists have combined the practical with the esthetic in a new fungicide for the control of brown patch, a disease of lawn and golf grasses. The fungicide not only controls the disease but dyes the grass any desired shade of green.

The United States Golf Association, through its greens workers, cooperated with the Department in the research work, which was under the direction of Dr. John Montieth, Jr.

The base of the- fungicide is malachite green dye. The first solutions—while effective as a fungicide —were an odd shade of blue that did not fit into the color scheme of any greensward. The scientists then found they could match any grass with the proper shade of green by adding about half-and-half of the malachite green and auramine O, a yellow dye, together with about 2 percent of crystal violet, a red dye. This mixture is just as effective as a fungicide as the original dye.

A half ounce of the mixture, costing about 10 cents, diluted with 2 to 5 gallons of water is sufficient to spray 1,000 square feet of turf.

The fungicide keeps the grass green from 3 days to 3 weeks, depending on the weather. A rain before the fungicide has time to dry washes it off quickly. Too, the color will not stand up as long in hot summer weather as in the winter.

Greens keepers on golf courses have used the fungicide and found that it does not harm healthy grass, and improves both the color of uneven greens and the tempers of crochety members who blame their poor putting on the uneven color of the putting greens. It also has been used on football gridirons and baseball infields.

The fungicide may be applied with an ordinary knapsack spray, or larger equipment if available.

Floral Association Meets
May 17th

Spring Flower Show . . . . T. McM.

Once again we find words inadequate to describe the beautiful spring flower display in Balboa Park. We could say the usual thing —exceptional flowers, a wonderful spirit displayed by exhibitors and audience, much praise from officials and judges on the handling of exhibits, unusual table arrangements and unique displays of odd plants —this and more, but still we would not have given a true picture. It was a great show and one that San Diego is proud of.

Mrs. Greer, our president, handled the show in her very efficient manner. She and the committee are deserving of all the praise they received.

NOTES: Miss Sessions again displays a collection of rare and unusual plants. Her comments kept the crowds around her exhibit . . . U. S. Naval Training Station with their usual outstanding display . . . Pieter Smoor points out arrangements showing a return to Victorianism—modern flowers in 1885 form. A modern interpretation . . . Another display that appealed to him was the one of shells on a fish net. Flowers that lived up to the form, type and texture of the shells. One especially, the variegated English ivy, was unique . . . And did you see that blue Chinese bowl with the flowers of Eucalyptus cornuta var. Lehmanni?

A new feature—the Junior League's May Basket display. Mrs. John Wimmer wins first prize for her efforts.

Table displays, Mrs. F. S. Sherman wins first for the breakfast tables. Mrs. Lee Shananquet wins a special award for an unusual patio table with a center piece of single roses.

Mrs. Frederick G. Jackson — a first award for her lovely tea table. Mrs. Otto Marsh first in the Dining Table Class with a beautiful arrangement of calla lilies . . . Mrs. Elliott Landon should have special mention for her table and heirloom china. And Mrs. Diamond of Pacific Beach for her table featuring roses and black glass . . . Dewey Kelly's patio table was the center of much interest and received a special award.

Did you see Miss Rainford's bridal table with that satiny Spathophyllum as the center attraction? It was beautiful.

The Exclusive table with a centerpiece of lilacs and yellow tulips was deserving of the first prize it won. Appointments were by Parmalee-Dorman.

The arrangement by Chester P. Strom of Daniels Florists and appointments by Jessop & Sons was another table that received much praise.

Geo. Otto & Son Nursery received the Floral Association silver medal for the outstanding display in the show. Weren't those Rhododendrons breath-taking?

Walter Anderson, as always, had a fine display, featuring a wishing well, and the exhibit of subtropical fruit by Williams & MacPherson was excellent.

A great show Mrs. Greer, our thanks to you for the floral treat.

THE YEAR OF THE BIG APPLE

This is the year of the Big Apple in more ways than one. This year's crop is the largest since 1926. Lower prices are attracting buyers, and to meet their need for variety in serving both big and small apples, the Bureau of Home Economics has prepared an eight-page folder of "Apples Recipes" with suggestions for using apples in 29 ways, under such heads as "Apples at any meal," "Apples with meat," "Apples with vegetables," "Apples in salads," "Apples in pastry," Apples in cake and candy," and "Apples in desserts."

Apple devotees will find here such old favorites as apple brown betty and apple tapioca. Recipes for apple pie, with and without cheese, turnovers, dumplings, and tarts, challenge the skill of the pastry maker. The right way to make applesauce, it seems, is to use only enough water to keep the fruit from scorching, and to add a few grains of salt to intensify sweetness.

April Meeting

At a previous meeting of the San Diego Floral association, after Dr. Anita Muhl's visit to Iceland, the members and friends of the association were given a treat with a talk by Dr. Muhl on the flora of that given region.

Again, Dr. Muhl having just returned from a world trip, addressed the club at the April meeting. In India, she said the flowers were very much the same as in San Diego, but grow more profusely. The high Himalayas were most showy with whole mountain sides covered with flowers, and the predominating color was magenta. At Calcutta she was impressed with the banyan tree, being hundreds of years old, and its branches send out aerial roots that form additional trunks. There were groves of tree dahlias seen in Colombia. Also fruit trees loaded with fruit, and garden flowers—zinnias, calendulas, delphiniums, snapdragons, etc.—all at one time.

The flora of Australia, Tasmania and New Zealand were much the same as in San Diego. Shrubs with bright colored leaves were seen in Fiji Islands. Samoa's flowers are much like those of Hawaii. The heather, and outstanding small gardens of Ireland were very noticeable.

Following Dr. Muhl's talk, Miss Ryan showed many pictures giving emphasis to places and plant life mentioned by Dr. Muhl.

Miss Sessions sent to the meeting, for distribution, a large number of small bouquets of Easter heather.

Mrs. Mary A. Greer, president, drew attention to the several flower shows being held at this time of the season, and of the San Diego Floral association's 31st annual spring show to be held April 30th and May 1st. "Streamlined" ideas in new arrangements were described, and an invitation was extended to all who delight in arranging flowers, to enter displays.

The new membership drive has been a success, she said, and the house committee is happy to announce that at a near future date the new dishes will have a real christening. —G. M. G.

Aboriginal Medicine . . .

By Geo. F. Carter

PART II

Although the Indian is commonly credited with the ability to eat any and everything, even his digestive apparatus occasionally became upset. In cases of indigestion the Indian frequently had recourse to an emetic. In this emergency a strong dose of tea derived from steeping the dried twigs of the grease wood (Adenostoma sparsifolium) would be administered. A lighter dose was used to alleviate stomach ache or intestinal disorder. Teas to cure head ache and stomach were also brewed from the leaves of wild buck wheat (Eriogonum fasciculatum, from sage (Artemisia tridentata), and from the creosote bush (Larrea Mexicana). Other emetics were derived from ragweed (Ambrosia artemisiaifolia), and unknown species of Adenostegia and Malvastrum.

That some of the remedies are still used is illustrated by the recent finding near Pala of a Mexican who still treats himself for chronic stomach disorder by drinking "creosote tea." A bundle of fresh creosote twigs (Larrea Mexicana) were noted in the rear of his house. Questioning brought out the fact that he prepared a tea from them which he drank to alleviate his stomach trouble. When some leaves were crushed, smelled, and their pungent odor commented upon, the Mexican shuddered and remarked that he hated the smell, and the tea. Obviously then, only his deep conviction of its medicinal value forced him to down it. In many ways his attitude and treatment were pre-Columbian, and his case marks a remarkable survival of primitive medicine in this region.

Some of the Indian food stuffs are said to have been naturally astringent and constipating. This effect was offset by two factors. First, the presence of several plants with purgative or laxative qualities. Second, the wide spread knowledge of these plants resulting from the nearly unavoidable discovery of their qualities by any user. Grease wood, in its role of general digestive relief, probably acted mainly as a laxative. A decoction of Perezia microcephela was credited with producing a very quick bowel passage. Purgatives were derived from roots of chilicothe (Echinocystis macrocarpa), wishbone bush (Mirabilis californica), and an unknown species of Sisyrinchium.

Colds and chest troubles were far from unknown. They are to be expected in light of the great exposure of the peoples to the elements as well as because of faulty interior air circulation. Several plants were used in this connection. Yerba Santa (Eriodyction crassifolium), was widely used. As its name suggests, the padres were sufficiently impressed with its helpful qualities to call it a sacred plant. A tea was made from the leaves of sumac (Rhus ovata) to be drunk for coughs and chest ailments. Creosote bush (Larrea Mexicana) was also used for coughs and colds.

Cuts, bruises, and sores were naturally consequent to an active, outdoor life. Greasewood twigs were reduced to a fine powder and mixed with grease to make a salve for bruises and sores. The leaves of Yerba Santa were pounded up to produce a poultice, or a strong brew was made to use as a liniment on sores or sprains. Leaves of Ericameria (Aplopappus palmeri) were combined with heat to reduce swelling of the feet. Saddle sores on horses were also treated with herbs. The root of the gourd (Cucerbitis perennis) was crushed and mixed with sugar and applied to chafed areas. Mistletoe, (Phoradendron flavescens) was ground to a powder and sprinkled into cuts, bruises and galls. Even the potent Jimpson weed was crushed and used as a poultice to reduce swelling. Other remedies were derived from leaves of Baccharis douglasii, roots of leather root (Psoralea macrostachya), galls from the scrub oak, (Quercus dumosa), and roots of chain fern (Woodwardia radicans). If number of remedies were an indication of need, then cuts and bruises must have been most numerous.

Several plant usages remain. Flowers of the blue elderberry (Sambucus glauca) were used to prepare a drug reputed to cure women's diseases. A tea was made from canchalaqua (Centaurium venustum) for fever cases. Croton californica was believed to produce abortion. Euphorbia polycarpa was believed to be of aid in cases of rattlesnake bite. Wild gooseberry (Ribes indecorum) was used to alleviate tooth ache. Although not medicinal in use several other plants would seem to deserve mention here. As is well known, tobacco is an American Indian discovery. Its use in America was exceedingly wide spread. It was normally used in a ritualistic manner. In the Southwest United States three varieties are known to have been used, namely: Nicotiana trigonophylla, N. attenuata, and N. bigelovia. In this territory the Cahuilla are said to have chewed. The Diegueno were known to have smoked pipes. The latter was probably the commonest manner of using tobacco in this region. Shamans also used it in curing when blowing smoke from the medicine tube over the patient, and used it in initiating the youths.

One of the most interesting of plant uses was that of the Jimpson weed, (Datura meteloides) in the initiation of the boys at puberty. At this time each boy was given a drink derived by crushing the plant in water. The effect was said to have been similar to opium in that it produced stupor with dreams. The resulting dreams were supposed to guide the boy in his adult life. The Cahuilla are said to have used the plant as a drug, merely for the resulting sensation. Over dosages often produced death, and in the initiation the amounts were most carefully controlled by the shaman.

Still another plant usage of interest was the poisoning of fish. It seems odd to find drugging of fish developed in this arid region. It was, never-the-less, considerably used. The shallow streams of this

area with their isolated pools favored this activity. Soap root (Chlorogalum pomeridianum) was the commonest drug used. The method was to crush the drugging material, divert the stream from the pool, and then fling in the plant. The fish soon floated up and were easily gathered.

Our knowledge of the efficacy of these herbs is varied. The value of cascara is established beyond any doubt. Fish poisons, laxatives, purgatives, emetics, tobacco and jimpson weed are so positive in their actions as to leave little question as to their effects, and hence, to some extent, of their worth. As to the usefulness of eye washes, little seems to be known. Possibly the mear washing of the eye caused the primary relief. For the cough, cold, chest reliefs, etc. even less is known. The mission fathers considered Yerba Santa to be of delnite value, but no modern use of it is known to the author. However, the majority of the Indian remedies for the simpler ills were probably effective, and a general view of the extent of their knowledge is impressive rather than ludicrous.

NOTE: This article does not claim extensive coverage. . . For those who might wish to pursue this subject further the following books would make a good starting point. Dr. A. L. Kroeber's "Handbook of the Indians of California" has many interesting notes. Dr. D. P. Barrow's "The Ethnobotany of the Coahuilla Indians" is splendid for its treatment of that tribe. Stephen Powen's "Indians of California" and Bancroft's "Native Races" also contain quantities of material.

A WEED KILLER

A satisfactory weed killer may be mixed according to the following formula:

1 lb. Sodium Clorate (Na. Cl. 03.)

1 gal. of water.

Apply with a sprinkling can.

This solution may be used on weeds in gravel paths and driveways and will be found quite effective.

For individual weeds use on a pointed stick with a solution of 1 lb. to 1 gal. of water.

DANGER—This solution is very combustible when dry and in contact with organic material, i.e. when spilled on clothing and allowed to dry.

What to Do for Ailing Plants

By The Master Gardener

This is an excellent time to take stock of your house plants. And if they do not measure up so well—if this one looks droopy and that one is tall and spindly, and another has scant foliage and is at a standstill, then ask yourself these questions:

1. Do I see to it that my plants secure fresh, pure air every day?—This is accomplished by airing the room thoroughly daily, being careful to open a window or door, however, that will not allow a direct draft to blow on the plants.

2 Is the temperature too high?—This is unhealthful for your family as well as your plants. A temperature above 70 degrees is not conductive to good plant growth.

3. Am I using some means of maintaining a moist, humid atmosphere?—This, too, is essential for human health as well as that of plants. There are now many humidifiers on the market, reasonably priced. Recently I noticed one advertised by a leading department store that fitted directly on top of a steam radiator, just as do the ordinary radiator tops; another type slips in between the sections of the radiator; others hook on the back. If you do not have steam heat, place open vessels of wataer about the house. Or use the new water mats below your pots. Or another method is to place the pots on a bed of pebbles or sand so that water will be avaporating at all times about the pots, yet the pebbles or sand will raise the pots above water level so the pots do not stand in the water.

4. Am I feeding my plants, and, in doing so, giving them a complete balanced diet?—It is most necessary that you give your plants a complete balanced plant food, since the small amount of plant food originally in the soil soon becomes exhausted. Buy a complete balanced plant food and feed in accordance with the directions on the package.

5. Do I keep my plants free from dust and grime?—Keep the foliage clean. The leaf is the plant's breathing apparatus, and the pores must not be stopped up. With the smooth fleshy leaved plants, this can be accomplished by wiping with a damp cloth. Other plants, such as ferns and geraniums, can be lightly sprayed with water frequently. Pick off all dead and damaged leaves and burn.

6. Do I scan the plants regularly for insects?—Watch for insects. Coleus is especially susceptible to mealy bug. Plant lice (aphis) are active on cyclamen and fuchsia. Ferns and ivy are subject to scale. The red spider, a small almost invisible insect whose presence can be detected by the tiny webs it spins, is apt to attack cyclamen, as well as a number of other plants; it thrives in a warm, dry atmosphere. If your plants are infested with any insect, ask your florist to suggest a suitable remedy. There are now many reliable all-purpose sprays on the market.

7. Do I water my house plants properly?—Watering must be done with discretion. Many conditions—size of pot, type of plant, humidity of the atmosphere—affect the amount of water a plant requires. Observe your plants; water only when the topsoil appears dry and crumbly, and when you do water, soak thoroughly. Certain plants should be kept on the dry side, such as geraniums; others on the moist side, such as the umbrella plant. Also, during dark periods, plants do not require so much water as when there is a great deal of sunshine. By a little careful observation you can soon tell when to water your plants, and how much water is required.

Evergreens by Bud-Graft

The bud-graft — long used in propagating fruit and nut trees—is being used by the United States Department of Agriculture to propagate evergreens. At the Forest Service Experiment Station in California are several new seedling crosses grafted successfully to Ponderosa pine rootstocks. Forest tree breeding has developed slowly because it was thought that evergreens, such as pine and fir, must be grown from the seed.

Questions and Answers

By R. R. McLEAN

Question: Kindly give me directions for the planting and care of dahlias. When should they be in the ground?—Mrs. M.

Answer: The tubers can be planted from March to July, although experts seem to prefer the month of May and up to the middle of June. Of course if successive plantings are made they will flower over a much longer period. The soil should be prepared before planting time by spading in well-rotted manure, or that from chicken runs. The beds should be spaded to a depth of at least 12 inches and the manure well mixed with the soil at least 6 to 8 weeks before planting time. Two or three weeks before planting it is advised that beds be spaded and pulverized a second time. If the soil is very heavy, such as adobe, mix in sand and lime, or preferably gypsum, some weeks before planting.

Stakes can be driven in the ground 12 to 18 inches where each planting is to be made, spacing them from 3 to 3½ or 4 feet apart. The stakes should be quite long and extend from 3½ to 4 feet above the ground. Each tuber is planted by a stake, say 6 or 8 inches deep in light soil and from 4 to 6 inches in heavy soil, and some 2 or 3 inches from the stake. It is advised by dahlia growers to cover the tubers lightly until they begin to grow, then finish the covering. For best development only one sprout is allowed to grow from a tuber, the strongest of course, and the balance cut off just under the ground. Later on as the shoot develops it is tied to the stake.

A little additional fertilizer is given from time to time, or as buds begin to form. Bonemeal is preferred by some growers for this purpose. The meal should be worked into the soil lightly over the root system. Irrigation will have to be attended to, watering thoroughly as often as the plants need it. The frequency depends upon the soil, oftener in sandy, light soils than in the heavier. You can, if you wish, mulch the plants with strawy manures or with hay, grass, bean straw, etc. but keeping the mulchs away from the plant stems.

Some pest control will probably have to be used, tobacco preparations for aphis, arsenite of lead for chewing insects, and dry sulphur dust for mildew. The tobacco sprays and arsenite of lead can be used together. A combination dust of tobacco extract, sulphur and arsenite of lead can be used at one time if you wish.

QUESTION: Will you please give me information about growing ivy as a house-plant? I have been snipping off runners and putting them in water. Some of them sprout and form roots but more often they shrivel and die after a few weeks. I should like to know what kind of pot should be used, soil mixture, directions for watering and whether or not the runners to be planted must have roots already attached. Mrs. J. E. F.

ANSWER: Ivy may be started by layering, that is, covering portions of the vine and after roots form at the covered area, this portion of the plant is severed and treated as an independent plant; or cuttings may be made in autumn from firm shoots and planted in pots or even in the open ground. The best medium to root cuttings in, however, is coarse, clean river sand. They may later be transplanted into ordinary clay pots and grown in a medium consisting of approximately one-third leaf mold, one-third clean sand and one-third sandy loam.

Fertilization should not be practiced until plants are well established. They should be kept moist. This is particularly important while rooting, but excessive watering should be avoided particularly before the cuttings have rooted. It is best to examine the soil below the surface by stirring with a finger or a stick and if the soil is moist they should not be watered until it commences to show signs of dryness without becoming entirely dry. The old rule which, however, could hardly be used with the limited amount of soil available in a pot, was to squeeze a portion of the soil in the palm of the hand and upon opening the fist if the lump of soil crumbled, it required water. If, however, the ball of soil remained compact, no watering was required.

QUESTION: Two avocados have not been doing well. They are seven or eight years of age and have apparently been in good condition until this past year. They have had lots of water, a good irrigation every two weeks or so and some fertilizer. The leaves do not seem to hang normally and the foliage is becoming rather sparse. The fruit dropped off this winter before it ripened. Can you give me any idea as to what the trouble might be?

ANSWER: Several things might have happened to the trees, such as heavy scale insects' attack, excess accumulations of alkali-salts in the soil, etc. The most likely explanation, however, is that the soil has been waterlogged by excessive irrigations, due to imperfect drainage. In some of our avocado sections a rather impervious subsoil is found at varying depths. For a few years, if this subsoil is down two or three feet, the trees grow normally, but finally when their roots reach the impervious strata referred to, trouble begins. Avocados, possibly more so than almost any other fruit tree, are impatient of wet feet and simply will not remain in healthy condition if this situation continues for any length of time. Excessive irrigations, or irrigations given too frequently, or even long continued rains, intensify the trouble and result in decay of the roots if this water stands around them and does not quickly drain away. Weakened and decayed roots are readily attacked by certain soil organisms, fungi, that further injure such trees.

It is advised that you dig around the trunks and remove the earth to a depth of eight or ten inches, exposing the crown roots over an area a foot or eighteen inches across. Scrape the bark of the crown and roots with a tree scraper or similar tool and remove any discolored or diseased bark you may find. Then scatter over the exposed roots and crown half a pound or so of Bordeaux powder, obtainable at any store handling insecticides. Irrigate less frequently and apply no more water than can be used by the tree. If this does not result in a recovery of the sick trees, then they should be taken out and replaced with some other fruit trees more tolerant of soil conditions as they exist.

Question: Will you kindly tell me through your column in California Garden what I can do for a very large black scale that infests my flowering maple during the summer? I almost lost it last summer. Also what causes the leaves on the fuchsias to become silvery looking and drop? Have been troubled with ants that are attracted by sweets all winter. Think they have a colony under the house as they come up between the partitions. Can find no trace of them outside. Have tried various Argentine ant poisons and still have ants a plenty—Mrs. H. A.H.

Answer: It is yet too early to spray for black scale. Wait until the latter part of June or better yet, the early part of July and then use an oil emulsion, say a pint to 6 gallons of water. Spraying emulsions, sold by all dealers in insecticides, come in various grades such as heavy, heavy-medium, medium, etc. There is no information available as to how much oil flowering maples will stand, but probably the medium weight will be satisfactory.

During the early spring black scales are in the egg stage largely and neither fumigation nor spraying is effective against the eggs. The eggs begin to hatch in late June or early July and for a period of two or three months thereafter can quite easily be killed by oil sprays, or by fumigation. If your maples were quite heavily infested last year it would probably pay you to spray twice, once in July and again in August.

Your fuchsias probably have been infested with thrips. Spray thoroughly with a tobacco solution, an ounce of black leaf 40 or similar tobacco extract to 4½ gallons of soapy water. Repeat in 3 weeks or so to kill the young thrips that may have emerged after the first spraying from eggs imbedded in the leaves. You can spray for thrips at any time now or whenever you find the insects on the leaves. They are very small, slender and quick moving.

Ants are a real problem in many instances. Remedies that work in some cases under certain conditions are almost valueless in others. The common fire ant will often come up from under the house through cracks in the floor or partitions and travel in the house long distances for food. If poisoned syrups have not been effective you might try a good sodium arsenite ant paste, sold by all druggists, placed on pieces of cotton and laying across the ant trails or poking in the cracks or partitions from which the ants are issuing. This would not be at all safe if children or pets are around, however. Where the nests of house-invading ants can be located, calcium cyanide dusts can be used very effectively to destroy them. Under normal conditions the use of poisoned ant syrups is most generally satisfactory, but it sometimes needs a continued exposure to finally drive them away.

Question: We have a nest of ants on our ranch that we would like to classify and destroy if detrimental to crops. They are as large or larger than a bee and look quite ugly. They are in a cracked rock in the midst of a lovely group of lilac and other wild shrubs that we want to preserve so want to use something that wouldn't injure plants. Can you give us any information as to control?—W.J.K.

Answer: Undoubtedly most of the effective materials that might be used for the control of the larger ants would hurt the shrubs as well. However, a little calcium cyanide say a tablespoonful or two at a time placed in the rock crack out of which the ants come probably would give good control without much danger to the plants. Carbon bisulphide would be very effective if used in the same manner but if it penetrated into the soil might seriously injure the plants.

If you could send a sample of the ants to the writer a definite determination would be made of the species of ant in question and methods of eradication more accurately advised. The only native ants as large as those you refer to are the carpenter ants. They live in large colonies usually under stones or in dead trunks of standing trees, stumps or logs and often extend their extensive galleries far underground. Their food is largely obtained from honey dew, excreted by aphis and other insects. They do not attack living plants.

Question: My rose bushes have lots of aphis and mildew has also appeared. Is there any spray I can use that will correct both of these troubles?—Mrs. W.

Answer: You can use either a combination spray or combination dust, that is, materials that are both insecticidal and fungicidal. For the spray use either lime-sulphur solution to which a little tobacco or pyrethrum extract is added, or potassium sulphide (liver of sulphur) and tobacco. Potassium sulphide is preferable at this time inasmuch as it will not stain the new foliage as will the lime-sulphur. Use 1 ounce of potassium sulphide to 3 gallons of water and add three-quarters of an ounce of tobacco extract or pyrethrum extract. If chewing insects, such as worms, are on the bushes also you can add as much arsenate of lead as tobacco.

Perhaps the easiest material to apply as well as one of the most effective is dust, using 9 parts of finely divided sulphur to 1 part of 10 per cent nicodust, a commercial preparation obtainable at any seeds store. A little dry arsenate of lead can be added if there are any worms on the bushes.

QUESTION: I am bothered with both moles and gophers in my lawn. Is there anything I can put down in their runways to drive them away, or poison them? Please give me directions. T. L. O.

ANSWER: There is no repellant known to the writer that will discourage gophers and moles. Gophers can be both poisoned and trapped and moles can be trapped. It is not practicable to attempt to poison moles inasmuch as their food is largely if not entirely animal, such as various worms, grubs, crickets, etc. There are special traps for moles which, if properly set and placed, are very satisfactory. There are also special types of gopher traps to be set down in the runs. Small pieces of carrot or sweet potato poisoned with a mixture of strychnine or saccharine and dropped down in the main runway, allocated by probing, are very satisfactory indeed.

Speaking of Roses

By Gertrude Evans

In the "Sunset" Magazine Mr. Gillispee writes most helpful articles; calling them sometimes "Calender for the Month in the Garden" and sometimes "Movies." The issue of last May included the care of roses as follows: "Dr. J. H. Nicolas an outstanding authority on roses has compounded a liquid fertilizer guaranteed to produce fine blooms. Here is his formula: Into a two gallon pail of water stir one level teaspoonful of Nitrate of Soda, a heaping tabelspoonful of superphosphate and a teaspoonful of muriate of potash. To use, make a saucer-like depression around each rose and fill this depression with water. While the ground is still wet pour in one pint of the fertilizer solution and then give the plant another good drink **immediately.** Follow this procedure every three weeks from now on until a month before the average date for the first frosts. You will see a difference in your roses."

I saw a wonderful difference in mine. It took only two days to see it coming, not slowly, but by leaps and bounds. They leaped into fresh greeness, new shoots and buds immediately. I wrote to one of our best rose growers to ask if he thought I had killed my roses. He replied, "It's almost exactly what I used on mine in the park all through the Exposition." It was all very exciting and lifted my temperature. Now may I tell you how I went to work. I ran the water on the beds for an hour; made the depressions; fixed the fertilizer in my quart pot and then put it in my two gallon pail. We fertilized one rose at a time. The result has been a grand crop of roses.

Garden Contest

The spring judging in our annual garden contest will be held on May 8th. Why not plan another year to have your garden entered?

A New Fern Book

For fern addicts there is a new book treating of these ancient and honorable genera. Its name is "Our Ferns" by Willard N. Clute (N.Y. Stokes, $4.00) but it might very well be called "Fern Study Made Easy" since the text gives us full descriptions of the species and their habitats, and in some cases also tells us the treatment they should receive in our wild gardens, while at the end of the book there is a very simple descriptive botanical key.

The whole story is given in non-technical terms, beginning with prehistoric times. Each fern is discussed in detail,—its history and botanical background, its characteristics of season, habit, leaf form or forms, its common names and the regions where it grows. And in addition to the half-tone illustrations and several colored plates, there are nearly two hundred line drawings to illustrate specific points and make identification just that much easier.

If you know Mr. Clute's books on native plants, particularly those on the flora of the eastern United States, and if you take his excellent little magazine "The American Botanist," you will feel quite sure that the information contained in the 388 pages of "Our Ferns" is authentic. Mr. Clute was the founder and first president of the American Fern Society and has for many years been connected with Butler University, Indianapolis, where he is now Director of the Herbarium and Botanical Garden. — Lester Rowntree, Carmel, California.

IT GIVES THE ANSWERS TO DRIVEWAY QUERIES

If you are thinking of building an automobile driveway, can you answer the following questions:

Do you know what clearance to provide for your car in curves, approaches, street entrances, or turning areas?

Do you know how much space should be left between the two strips of a ribbon-type drive and the right width for the ribbons?

Do you know how steep an incline is wise or safe? And what to do if you have too steep an incline? Do you know the material to use to keep a sloping drive from washing?

Do you know how to drain your drive?

Do you know how to build retaining walls on either side of the drive so that the ground in freezing will not push them down?

Do you know the great variety of materials available? And how to construct your drive of any of these materials?

Do you know whether it is better to use round or angular gravel, large or small pieces, and in what proportions?

Do you know how much material you will require?

Answers to these and other questions on automobile driveways are in the bulletin Construction of Private Driveways, prepared by the Bureau of Public Roads. You may obtain a free copy by applying to the United States Department of Agriculture, Washington, D. C., for Miscellaneous Publication No. 272.

HAVE YOU A MYSTERY GARDEN?

We all are interested in special gardens of one sort and another. Have you ever thought of a mystery garden. I have a friend who has a special garden of this kind and it is as absorbing as a mystery thriller. She doesn't know the names of half the plants that are in the garden but she can tell you who gave her the plant or seeds or where she happened to gather them.

Now such a garden can't be very well planned, I'll admit, but you can have enough known varieties in it to give it form and design, and the mysterious cuttings and divisions and other things which might come your way can be planted in this bed, and if they in time become too large, they can be removed to a more suitable location. I'll also admit you get some strange bed fellows together but again the haphazard arrangement has a charm that only a mystery garden can have.

Light on Shady Problems

By The Master Gardener

Many suburban gardeners have shady spots in their grounds which are the despair of their lives, and some city gardeners have practically all shade to contend with, due to the close proximity of tall buildings, and the presence of a tree or two on their tiny plots.

But a satisfactory garden can be achieved in such areas, with an appeal all its own, if the proper plants are chosen and if sufficient humus and plant food is furnished to the plants. Many failures with shady gardens are due to the fact that people fail to realize the trees and shrubs which cast shade also draw a great amount of plant food from the soil, and thus impoverish it. The large plants, like trees and shrubs, also require a great deal of moisture; thus, if all the vegetation is not to suffer through excessive dryness and starvation, there must be sufficient humus in the soil, so it is capable of absorbing and holding moisture and plant food. At the same time, drainage must be good, and the soil must be well aerated.

Therefore, the first step to take if you wish to establish a garden in a shady area, is to see that your soil is in good physical condition, and that it has a plentiful supply of available plant food. If your soil is hard and packed, work in sand and peat moss until the texture is good—friable, loamy, and good organic content. Then, after you have pulverized and leveled off the area, apply a complete balanced plant food, applying one rounded tablespoonful per square foot of surface area (equivalent to 4 lbs. per 100 sq. ft. on larger areas) and work lightly into the soil.

The selection of plants is the next thing of importance. Where you have only partial shade, you will find you have a wide selection, but where there is full shade, you will have to choose carefully.

Ferns

You will want hardy ferns, of course. Osmunda claytoniana (Interrupted Fern) and Dryopteris marginale (Leathery Wood Fern) are two hardy ferns recommended for difficult situations. The Interrupted Fern will thrive in either sun or shade, and will grow where many other varieties would fail, therefore it is very popular for porch or foundation planting. The Leathery Wood Fern must have full shade, however. Try Woodwardia in this location, too.

Ground Covers

Two very popular ground covers, useful in shady borders with ferns, and both evergreen, are: Vinca Minor (Periwinkle or Trailing Myrtle); and Pachysandra terminalis (Japanese Spurge).

Try This Color Scheme

A new fuschia bloomed last week, and such an event is to a fuschia lover of equal importance to the baby's first tooth with a new mother. It was Perky—a tiny bloom perhaps one inch in diameter but most entrancing, a different shade of pink and rose. And near it the Venus Vetrix is in full bloom—about same size as Perky—white tube, delicate pink petals, tipped light green—purple blue coralla, deep rose stamens and extra long pistil nearly white—and to add to the beautiful little plant about one foot high, the coralla when older, changes to a deep rose. Such a bunch of loveliness in a small space is very seldom seen.

If your space is not large, plant these two and with them put Pumilla, a very small plant profusely covered with tiny red blooms.

Then for contrast, and to show the oddities of fuchsias, somewhere near put the Macrostemma alba—growing tall tree-like—but with quantities of the most dainty pinkish blooms, the same size as the other three. And if one wishes to extend the contrasts, next beyond the Macrostemma place one of the immense double blues, Vincent-De-Indies, preferably, and with that put Fascination or Mrs. Snyder, both of them very large showy pinks in striking dark shades.

Bertha M. Thomas.